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Case Report

Aspiration of dental file requiring thoracotomy

Aspiration requiring thoracotomy

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Abstract

Foreign body aspirations are rare in the adult age group, although they occur in children and patients with impaired swallowing reflexes. Clinical presentation of foreign body aspirations is nonspecific and can mimic many other diseases. Although detailed history and radiological imaging can assist in diagnosis, bronchoscopy holds the most important place in diagnosis. Bronchoscopic methods and surgery are used for the removal of the foreign body after diagnosis. In our case, we addressed foreign body aspiration in an adult patient.

Keywords

Apiration, Thoracotomy, Foreign Body

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Introduction

Foreign body aspirations are rare in adults. Diagnosis in these cases relies on history and suspicion of a foreign body, as clinical symptoms are not specific. While radiopaque foreign bodies can be detected in chest X-rays, radiolucent objects may not be visible. Flexible fiberoptic bronchoscopy is often the preferred diagnostic intervention. Once diagnosed, prompt removal of the foreign body is crucial and can be performed using flexible fiberoptic bronchoscopy or rigid bronchoscopy. In rare cases, thoracotomy is applied post-aspiration. The presented case involves a 47-year-old male who aspirated a dental file during a root canal procedure. Despite unsuccessful bronchoscopy, thoracotomy and lower lobe resection were performed.

Case Report

A 47-year-old male, who aspirated a dental file during a root canal procedure, was referred to our clinic with severe cough complaints. Physical examination revealed no pathology. A chest X-ray showed an opaque foreign body, approximately 2.5 cm in length, in the right lower lung lobe (Figure 1). Rigid bronchoscopy under operating room conditions was attempted but unsuccessful in reaching the foreign body. Subsequently, a thoracic CT scan was performed to determine the location, shape, and extraction method of the foreign body (Figure 2). The object was identified in the basal segment of the right lower lung lobe, and a fiberoptic bronchoscopy was performed without success. A decision was made to perform a mini thoracostomy. A needle was extracted from the basal segment of the right lower lung lobe. Postoperative chest X-rays at 1 and 24 hours showed no pathology. The patient had an uneventful recovery and was discharged after one day of intensive care monitoring.

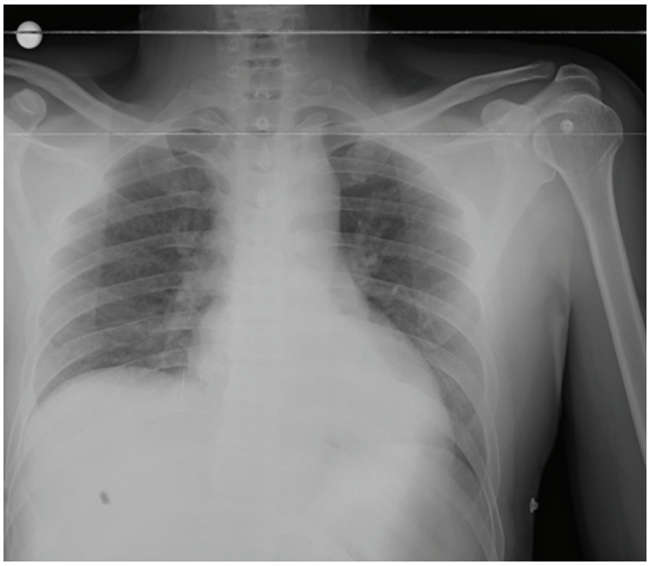

Figure 1. An opaque foreign body, approximately 2.5 cm in length, in the right lower lung lobe

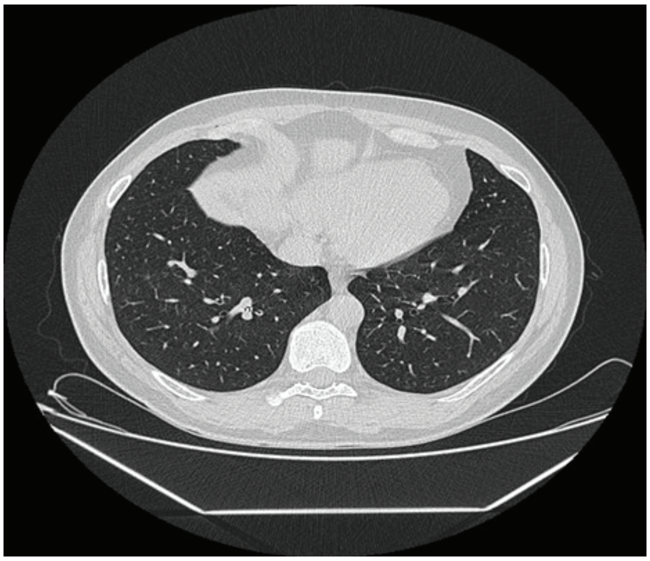

Figure 2. The object was identified in the basal segment of the right lower lung lobe

Discussion

Despite advancements in anesthesia techniques today, foreign body aspiration into the airway can still lead to complications, especially in childhood and advanced age, sometimes resulting in fatal clinical scenarios. In the literature, foreign body aspirations in childhood are reported as one of the most significant causes of mortality [4, 5]. In the United States, an average of 300 children is lost annually due to foreign body aspirations [4]. In children, due to the tracheobronchial system being weaker than in adults, foreign bodies entering the respiratory system can cause sudden obstructions [1, 2, 4].

Symptoms in foreign body aspirations can vary; there may be no signs, or sudden irritant cough, wheezing, side pain, and air hunger may occur. Cough is the most common symptom (90%). The triad of wheezing, paroxysmal cough, and air hunger should raise suspicion of foreign body aspiration. Diagnosis in asymptomatic cases can be challenging.

Partially inert substances, when aspirated, can be tolerated for an extended period without symptoms. However, they may later progress distally, leading to chronic inflammatory reactions such as chronic lung infection, bronchiectasis, or destroyed lung, necessitating lung resection. In radiological evaluation, posteroanterior and lateral chest X-rays are the first step. Computed tomography is useful, especially in assessing inflammatory events after obstruction. When the aspirated foreign body is radiolucent, diagnosis becomes challenging. In some cases, direct chest X-rays and bronchoscopy may not be sufficient. In children, the presence of pneumomediastinum without trauma should raise suspicion of foreign body aspiration. In cases with a history of foreign body aspiration but no definitive diagnosis, repeating bronchoscopy and obtaining a computerized thoracic tomography may be appropriate [2].

Sucu and colleagues applied multiple diagnostic flexible fiberoptic bronchoscopies in cases suspected of foreign body aspiration, detecting foreign bodies in 12 out of 21 cases [6]. In our case, there was a complaint of severe cough, and the patient described the aspiration of a foreign body during a dental canal treatment. Strong evidence or high suspicion of a foreign body history is a definite indication for bronchoscopy. In organic foreign body aspirations, the aspirated organic material, due to swelling or fragmentation, can lead to complications and present more severe clinical pictures. Multiple rigid or flexible bronchoscopies may also be necessary in organic foreign body aspirations [7].

Foreign body aspirations in childhood vary from country to country. Gök and colleagues, who performed bronchoscopy on 249 cases suspected of foreign body presence, detected foreign bodies in 132 cases. The extracted foreign bodies were determined to be 20.76% sunflower seeds, 16.15% watermelon seeds, 13.07% sewing needles, 5.38% dry beans, and other food items in smaller percentages [8].

When dealing with shaped metal foreign bodies such as needles and pins, caution is necessary during extraction to avoid damage to surrounding tissues or potential distal displacement. Extraction by an experienced bronchoscopist, preferably in an operating room setting for patient-physician comfort, is more appropriate. Although the primary preference in treatment is rigid bronchoscopy, the choice may change depending on the patient's condition, the nature and location of the aspirated foreign body, and the experience of the operator. In our case, thoracotomy was preferred as the foreign body could not be removed with rigid or flexible bronchoscopy.

Conclusion

In summary, foreign body aspirations are rare in adults and, as seen in our case, may sometimes necessitate thoracotomy.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or compareable ethical standards.

Conflict of interest

The authors declare that there is no conflict of interest.

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